

CLAIMS

What is claimed is:

1. A method for measuring a wafer position on a lower electrode in a plasma etching device, said method comprising the step of:

    placing a wafer on a lower electrode in a process chamber of a plasma etching device, wherein said wafer comprises a front side and a back side;

    determining a differential pressure gradient between said front side and said back side of said wafer; and

    measuring a position of said wafer on said lower electrode utilizing said differential pressure gradient.

2. The method of claim 1 further comprising the step of:

    connecting said process chamber to a pump.

3. The method of claim 1 further comprising the step of:

    connecting a throttle valve to said process chamber.

4. The method of claim 3 further comprising the step of:
  - connecting at least one additional valve to said throttle valve, wherein said throttle valve and said at least one additional valve are connected in series with one another between said process chamber and said pump.
5. The method of claim 2 further comprising the steps of:
  - connecting at least one line between said pump and said process chamber; and
  - connecting at least one pressure gauge to said at least one line between said pump and said process chamber.
6. The method of claim 1 further comprising the step of:
  - connecting a pressure monitor to said process chamber to monitor a pressure associated with said process chamber.

7. The method of claim 1 wherein the step of determining a differential pressure gradient between said front side and said back side of said wafer, further comprises the step of:

    determining said differential pressure gradient between said front side and said back side of said wafer utilizing a plurality of associated pressure gauges.

8. The method of claim 1 further comprising the steps of:

    delivering helium to said process chamber; and  
    thereafter determining said differential pressure gradient between said front said and said back side of said wafer utilizing a plurality of associated pressure gauges.

9. The method of claim 1 further comprising the step of:

    indicating an unacceptable wafer shift associated with said on said lower electrode, if said differential pressure gradient is greater than a ten percent value.

10. The method of claim 1 wherein said process chamber comprises a plasma etching chamber.

11. An apparatus for measuring a wafer position on a lower electrode in a plasma etching device, said apparatus comprising:

    a process chamber comprising a lower electrode upon which a wafer is placed, wherein said wafer comprises a front side and a back side;

    pressure mechanism for determining a differential pressure gradient between said front side and said back side of said wafer; and

    measurement mechanism for measuring a position of said wafer on said lower electrode utilizing said differential pressure gradient.

12. The apparatus of claim 1 further comprising:

    a pump connected to said process chamber.

13. The apparatus of claim 1 further comprising:

    a throttle valve connected to said process chamber.

14. The apparatus of claim 13 further comprising:

at least one additional valve connected to said throttle valve, wherein said throttle valve and said at least one additional valve are connected in series with one another between said process chamber and said pump.

15. The apparatus of claim 12 further comprising:

at least one line connected between said pump and said process chamber; and

at least one pressure gauge connected to said at least one line between said pump and said process chamber.

16. The apparatus of claim 11 wherein a pressure monitor is connected to said process chamber to monitor a pressure associated with said process chamber.

17. The apparatus of claim 11 wherein said pressure mechanism determines said differential pressure gradient between said front side and said back side of said wafer utilizing a plurality of associated pressure gauges.

67,200-708  
2001-0990

18. The apparatus of claim 11 further comprising the steps of:  
delivery mechanism for delivering helium to said process  
chamber.

19. The apparatus of claim 11 wherein said measurement mechanism  
further comprises:

measurement mechanism for indicating an unacceptable wafer  
shift associated with said on said lower electrode, if said  
differential pressure gradient is greater than a ten percent value.

20. The apparatus of claim 11 wherein said process chamber  
comprises a plasma etching chamber.